
Preface to the English edition

I have always thought that writing on popular science is what scientists do when they grow old. Now that I am actually in the closing stages of a popular science book, I have fathomed that even if you are not so advanced in years at the start, you will certainly look older by the end. In fact, I realized it well before finishing the original Italian edition of this book, “*La materia dei sogni*”, published last year by Springer Italia. So, when my Editor asked me whether I was “enthusiastic” about preparing an English translation, I thought that, according to the original Greek meaning of this word, I would have to be “possessed by a god” – not necessarily a benevolent one – to accept.

In addition, I am also rather skeptical about “popular” science in general, in particular when I bump into those books pretending to address in “popular” language formidable mathematical conjectures, or esoteric topics such as black holes, superstrings, and dark matter. Quite often, skimming through their first chapters, the non-professional reader gets the impression that everything is as clear as day, to realize well before the end that it is in fact quite a foggy day. Worse than that, books of this kind may convey an idea of science as “magic”, rather than as the fruit of the humble but strenuous labor of many people. And this is, to my mind, a major sin for a popular science writer.

Why then write a popular book on “soft matter”, whatever this means (wait and see)? In short, because it is challenging and fun. Challenging, because explaining simple things in a simple way is much harder than presenting hard stuff to a scholarly audience – you are generally so accustomed to the matter that you hardly realize how much technical jargon has impregnated your day-to-day language. Fun, because writing this book has possibly made me grayer, but definitely amused me a lot. Anthony Zee, author of one of the most popular books in theoretical physics (popular because physicists love it, not because of its content – although Zee is a master of popular science too), claims that “beauty is fun”. Giving Keats his due, I think this is deep truth too.

So, is this an easy book? If by “easy” you mean that it is self-contained, requiring little background knowledge to be appreciated, yes, it is an easy

book. Definitely. Leafing through the pages, you will find hardly any hideous expressions like “It is well known” or “It can be easily shown” (if you do, just let me know), and very little math – although I hope you will gather that reading physics without math is like listening to music with no idea of what notes and chords are. But if you mistake “easy” for “requiring no effort”, you are wide of the mark. Americans say, “There is no free lunch”, which is often assumed to be what Fiorello La Guardia meant, on becoming mayor of New York, by saying “È finita la cuccagna”. In fact, this Italian idiom rather translates as “The party is over” and, as far as this book is concerned, I think it is quite the other way around: the party is just starting, and I hope you’ll have fun, but this requires a little commitment on your side. For there is no free fun in science (and life in general): real, long-lasting pleasure necessarily stems from personal effort. Einstein proclaimed, “Physics should be made as simple as possible, but not any simpler.” Anthony Zee recasts this as “Physics should be made as fun as possible, but not any funnier.” Let me dare to mix these two insightful remarks by stating that physics should be made simple enough to be amusing, but not so trivial as to spoil real fun. Nevertheless, I have tried to approach this matter very gently – a goal that, eventually, turned out to be less challenging than I expected, and not by virtue of my modest skill, but because the subject we are going to tackle is so deeply rooted in our daily experience that my only job has been to turn it into plain words.

This work is only the tip of an iceberg arising from the joint efforts and heated debates I had with many colleagues, and from the little I managed to remember from them. In fact, many years in this field led me to look upon those who share with me the fascinating enterprise of doing science much more as friends than colleagues. Truly, together with the wonder of discovering so many brilliant minds among my students, this is the most precious gift I have gained from my job. I am sure that, knowing my amnesiac tendencies, these friends will not expect me to remember them all. Let me, however, mention explicitly some fellow scientists who made a direct contribution to this book by providing original material and ideas, or simply pointing out stupid mistakes. So, many thanks to Piero Baglioni, Giuseppe Caglioti, Marina Carpineti, Roberto Cerbino, Paul Chaikin, Luca Cipelletti, Mario Corti, Daan Frenkel, Marzio Giglio, Albert Philipse, Peter Pusey, Francesco Sciortino, Gaetano Senatore, Joel Stavans, Bill van Meegen, and David Weitz. I also thank Claudio Beccari for his precious help as a great expert in \LaTeX , Pierluigi (“Piero”) Durat for presenting me with the nice picture that closes this book, and finally my coworkers Stefano Buzzaccaro and Daniele Vigolo, begging their pardon for the amount of time I dedicated to this *divertissement*, leaving aside hard science (not to mention my duties as husband and father). No thanks would be adequate for Vittorio Degiorgio and Walter Goldburg, to whom I owe most of the little I know about science. Last but surely not least, a big hug to Henk Lekkerkerker, and not only because of the nice foreword he prepared for this book. Everyone who has ever listened to one of his talks agrees that Henk is crystal clear in his explanations. What is probably less known is how

painstakingly he “distils” each word he says, even if he has perfectly mastered the subject: just try to invite him out for dinner the night before his talk, and you’ll realize this in full. I regard this as a basic lesson in what it means to be professional.

Let me also acknowledge the precious help given by Springer in setting up a perfect framework allowing me to address, with this English translation, a far wider audience. Compared with the Italian edition, this book has been rather enlarged, by adding a somewhat unconventional glossary, a special index of all common stuff mentioned in the text, and many new color figures. If you like them, don’t thank me, but rather the strenuous insistence of Maria Bellantone. Maria is originally from Sicily, which is farther from Milano than London. Yet our endless arguments about what should versus what *could* reasonably be done to improve this book convinced me that Italians, despite growing up so far apart, share at least one virtuous bad habit: stubbornness. Nevertheless, all this would have remained mere wishful thinking without the invaluable contribution by Lindsay Nightingale who, besides turning my rather uninspired English into a sparkling language, was crucial in clarifying many scientific aspects (Lindsay insists that she is just an “ex”-physicist, but I claim that physics is like malaria – once you are infected, you can hardly get rid of it). Finally, let me mention Mieke van der Fluit, who carried out all of the file-handling job, patiently bearing with this messy author. I am also indebted to her for the best appraisal of this book I have received so far. When asked if she had suffered too much in reading the book, she said that on the contrary, it was like eating a cookie. I hope you’ll suffer as much.

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Soft Matter

The stuff that dreams are made of

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